Univ. j. zool. Rajshahi Univ. Vol. 30, 2011 pp. 41-44 ISSN 1023-6104
http://journals.sfu.ca/bd/index.php/UJZRU

Diversity of avifauna at the Bangladesh Academy for Rural Development (BARD), Kotbari, Comilla

M. Firoj Jamam[1*], Md. Saidur Rahman[2], Muhammad Enamul Haque[2]
[1]*Department of Zoology, University of Dhaka, Dhaka 1000, email: mfjaman@yahoo.com*
[2]*Department of Zoology, University of Jagannat, Dhaka*

Abstract: The diversity of avifauna at the BARD (Bangladesh Academy for Rural Development), Comilla was studied from March, 2010 to March, 2011. A total of 41 species of birds (20 non-passerines and 21passerines) were identified. Among the total species, 37 (90.25%) were resident and 4 (9.75%) were winter migrants. Regarding to the habitat types utilized by individual species, 11 was bush dwellers, 5 at open place, 5 on human habitations, 4 on tall trees, 10 in garden, 6 found at near the pond. Relative abundance (by number) showed that 10 species were very common, 25 common, 9 fairly common and 7 few. The highest density was recorded for *Passer domesticus* (480.15 indiv. / acre) and the lowest was for *Dicrurus macrocercus* (1.29 indiv. / acre). Among these birds, 18 (43.91%) species were insectivores, 6 (14.64%) piscivores, 6 (14.64%) granivores, 2 (4.88%) frugivores, 4 (9.76%) rodentivores, only one (2.44%) nectar feeder and the rest 3 (7.32%) were mixed feeders. Among the avifauna, 8 (21.63%) species were included in the threatened category, of which 2 (5.41%) were critically endangered, 3 (8.11%) endangered and 3 (8.11%) vulnerable nationally. Direct communication with local people recorded that illegal exploitation of forest, trapping, shooting of birds and collection of young as cage birds are the mentionable causes of decline of the diversity and population of avifauna in the study area. Control of unwise exploitation, plantation of indigenous fruit-trees and creation of awareness, preparation of integrated management action plan (IMAP) and its implementation in co-operation with National and International organizations are mostly essential for conservation of avian diversity in the study area.

Keyword: Ecology, diversity, avifauna, BARD, conservation.

Introduction

Among the total 1200 species of birds recorded in Indian subcontinent (Ali & Ripley, 1983), Bangladesh represented 628 species, of which 41 were threatened (Annonymus, 2000). Although, a total of 718 bird species under 64 families was reported by Khan (2010). Bird is an important wild animal as they helps in pest control, pollination, cleaning the environment as scavenger as well as an important ecological indicator (Ali & Ripley, 1983). Study site has been representing many species of birds that need to be documented for their protection.

Some studies on the diversity of avifauna were performed elsewhere (Rahman, 1971; Husain & Sarker, 1979; Husain et al., 1983; Sarker, 1983; Hossain & Sarker, 1997). Haque (1975) and Jaman et al. (2004) surveyed and discussed about ecology and conservation of avifauna. So far known no any extensive and methodical collection of data on avifauna at the Bangladesh Academy for Rural Development (BARD), Comilla and associated areas was done in the past. Due to the lack of baseline data it is difficult to know exactly how many species of birds are present in this area; and without baseline data it is very difficult to prepare any conservation plan for the protection of avifauna. Therefore, current study was conducted on avifauna at BARD to reveal the status, distribution, food habits and habitats of individual species of bird. We also attempted to study the vegetation at BARD. Due to the uniform physical features and vegetation as well as importance of study site to the tourist, we considered BARD, Comilla is a suitable place for the study of avian diversity.

Materials and Methods

This study was based on direct field observation started from March 2010 to April 2011. Data collection was done once in a month for 6 to 7 days and continued from early morning to evening during the whole study period. For data collection transects line and plotting methods were employed. Information was also collected through the direct communication with local people.

Transect line: in this method birds were observed and counted on each side of the transect line (size: 1000m long × 100m width) and recorded. A total of 50 transect lines were made across the study site.

Plot counting: four plots (size: 500m × 100m) were also selected to study the birds. A total of 50 plots were made to count individual species of birds within the study site. During observation, movement of observer was kept at a uniform speed and while walking along a route, attempts were made to note the birds when they were whiting, singing or flying over the study area or foraging and feeding. Sometimes portable hide were used for closer observation. Two pairs of binoculars (Prism a 20×50), digital camera (Canon Kiss Model 2009), video camera (Sony, Model 2008), GPS, distance measuring plastic tape and chemicals were used during data collection. Field guides on birds (Ali & Ripley, 1968-1974; Ali & Ripley, 1983; Khan, 2010) were used in order to identify species during observation. During the analysis of data in the laboratory after taking the pictures or videos from the field, the collected data were compared with the mentioned books.

Museum specimens of birds of the Department of Zoology, University of Dhaka were also used to identify collected specimens and pictures of birds taken from the study site. All collected data were imputed in the computer to make the systematic data base for each species and categorized according to the taxonomic position. Habitat types, food habits, etc were also recorded.

Study Area: Bangladesh represents a unique zoogeographical zone having all possible types of habitats comprising the fauna and flora. The present study was carried out in Bangladesh Academy for Rural Development (BARD) of Comilla district in Bangladesh, where there are many species of birds occurred. It is situated between 23´ 26^0 north latitudes and 91´ 7^0 longitudes East. BARD is located at Kotbari, a rural area along the Mainamati-Lalmati (one of the archeological sites of Bangladesh) hill range in Comilla district at a distance of about 10 kilometers from Comilla Sadar town. The sprawling campus covers an area of about 156 acres of land including undulating hilly terrain and valleys. The Academy was established in 1959 basically as a training institute to train government officials and village organization in various subjects' relation to rural development. Important vegetations are: 77 species of tall trees (e.g., *Acacia catechu*, *A. moniliformis*, *A. nilotica*, *Aegle marmelos*, *Albizia* spp., *Alstonia scholaris*, *Anthocephalus chinensis*, *Artocarpus heterophyllus*, *Azardirachta indica*, *Bombax ceiba*, *Butea saperba*, *Cassia fistula*, *Cocos nucifera*, *Dalbargia sisso*, *Delonix regia*, *Eucalyptus citriodora*, *Ficus bengalensis*, *F. comosa*, *Mangifera indica*, *Syzygium cumini*, *Tamarindus indica*, *Zizyphus maritiana*) and agricultural plants (e.g., *Brassica* spp., *Lathurus sativus*, *Oryza sativa*, *Triticum aestivum*, etc.).

Temperature: November to June is the hot season but have some wet days. June to October is rainy season. The highest temperature is 36.7^0C in October and the lowest is 8.6^0C in February

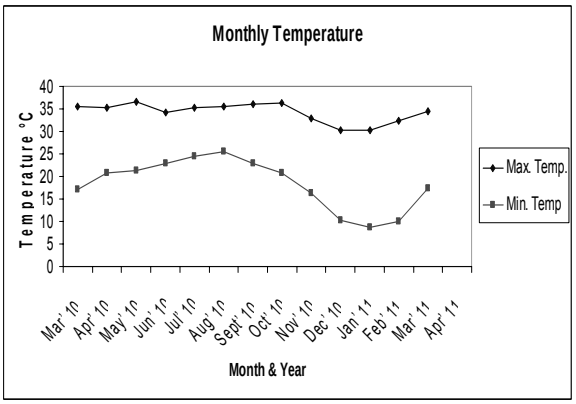

Fig. 1. Average monthly temperature in the study site.

Results and Discussion

A total of 41 species of birds were identified at BARD (Table 1). Of these, 37 species were resident and 4 winter migrants. Harvey (1990) found 42 species of birds in the same habitat those were belonged to 10 orders and 21 families. Of those, 38 species were resident and 4 winter migrants. In Rangpur, Islam (1970) recorded 82 species of birds and in Faridpur, Rahman (1971) recorded 109 species. Das (1992) reported 110 species from Sylhet and Akter (1997) found 47 species of birds in an urban habitat, the Baldah Garden, Dhaka.

Regarding to the relative abundance of individual species, 11 (26.83%) species were very common, 18 (43.9%) common, 8 (19.51%) fairly common and 4 (9.76%) species few in number (Table 1 and Fig. 2).

The highest density was recorded for house sparrow (*Passer domesticus*, 480.15 indiv./ acre) followed by pied starling (*Sturnus contra*, 285.9 indiv./ acre), common myna (*Acridotheres tristis*, 210.9 indiv./ acre) and jungle myna (*A. fuscus*, 114.8 indiv./ acre) (Table 1).

Regarding to the feeding habits, the highest number of birds (18, 46.34%) were insectivorous followed by piscivores (14.63%) and mixed feeders (12.19%) (Table 1 & Fig. 3). Husain et al. (1992) reported 45 species of insectivorous birds, eight raptorial, 13 piscivorous, three nectar feeders, 11 granivorous, two seed eaters, 10 frugivorous and 18 omivorous along the roadside birds between Chittagong and Tecknaf. We found that each species of bird utilize diverse habitats during feeding, roosting and nesting time in the study site. Majority of the avifauna recorded on the tall trees (53.65%) followed by bushes (39.02%) and open fields (36.58%) (Table 1).

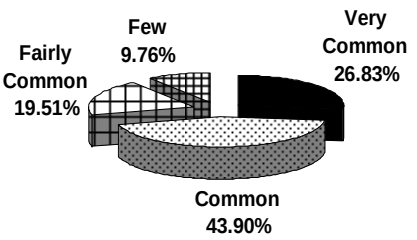

Fig.2. Relative abundance of birds in the study area.

Table 1. List of avifauna with their status at the BARD

Non-passerine birds	Scientific Name	English Name	Local Name	[1]PD	[2]RA/RS	[3]IUCN NS	[4]HU	[5]FH
Class - Aves								
Order - Pelecaniformes								
Family- Phalacrocoracida	*Phalacrocorax niger*	Little Cormorant	Choto pankawri	10.90	F R	VU	R	P
Order -Ciconiformes								
Family -Ardeidae	*Ardeola grayii*	Pond Heron	Kanibok	23.08	FC R	LR	Of, CL, P,C	P
	Egretta intermedia	Intermediate Egret	Maijjabok	20.52	FC R	VU	We, R, P	P
Order - Falconiformes								
Family – Accipitridae	*Milvus migrans*	Pariah Kite	Bhuban cheel	45.52	C R	CR	Of, Tt	R
	Haliastur indus	Brahminy Kite	Sankhacheel	25.65	C R	DD	Of, Cl, Tt	R
Family - Falconidae	*Falco tinnunculus*	Red headed Merlin	Lalshir baj	1.93	F M	-	Tt, Of	R
Order - Columbiformes								
Family - Columbidae	*Treron phoenicopterus*	Green Pigeons	Harial	25.00	C R	EN	Bh, Tt	F
	Columba livia	Rock Pigeon	Jalali kabuatar	33.34	C R	LR	Hh, Of, Cl	G
	Streptopelia. chinensis	Spotted Dove	Tilaghugu	87.18	C R	EN	Of, Tt	M
	S. decaocto	Ring Dove	Raj ghugu	32.06	C R	CR	Bh, Tt	M
Order - Psittaciformes								
Family - Psittacidae	*Psittacula krameri*	Rose-ringed Parakeet	Tia	65.39	C R	LR	Tt	M
Order - Cuculiformes								
Family - Cuculidae	*Eudynamys scolopaceus*	Koel	Kokil	24.36	C R	LR	Tt, Hh, Bh	I
Order - Strigiformes								
Family - Strigidae	*Tyto alba*	Barn Owl	Laxmipencha	9.62	F R	EN	Tt, Hh, H	R
Order - Coraciformes								
Family - Alcedinidae	*Ceryle rudis*	Lesser Kingfisher	Pakra machranga	13.47	FC R	LR	P, R, H, Dt	P
	Alcedo atthis	Common Kingfisher	Choto machrangha	31.98	C R	LR	P, R, Dt	P
	A. meninting	Blue Ear Kingfisher	Machranga	10.90	FC R	LR	P, R	P
Family -Meropidae	*Merops orientalis*	Green Bee Eater	Shuichora	19.23	C R	DD	Cl, Of	I
	Micropternus brachyurus	Eastern Rufous	Lalchey kaththokra	27.31	C R	LR	Tt	I
Order - Piciformes								
Family - Picidae	*Dinopium benghalense*	Golden Back Woodpecker	Sonali pit kaththokra	32.06	C R	LR	Tt	I
	Dendrocopos macei	Fulvous Breasted Pied Woodpecker	Batabi kathkutali	35.25	C R	LR	Tt	I
Passerine bird								
Order - Passeriformes								
Family - Hirundinidae	*Lanius schach*	Black Headed Shrike	Kalashir Koshai	14.11	FC R	LR	Cl, Of, Bh	I
	L. cristatus	Brown Shrike	Dhusher koshai	12.82	FC M	-	Cl, Of, Bh	I
Family - Oriolidae	*Oriolus oriolus*	Golden Oriole	Sonali halud pakhi	24.36	C M	LR	Tt, Bh	I
	O. xanthornus	Black Headed Oriole	Holdey pakhi	40.39	C R	LR	Tt, Bh	I
Family - Dicruridae	*Dicrurus macrocercus*	Black Drongo	Fingey	89.11	VC R	LR	Cl,Of,Bh,Tt	I
	D. leucophaeus	Ashy Drongo	Kalche fingey	5.25	F R	LR	Tt, Bh	I
Family - Sturnidae	*Sturnus contra*	Pied Starling	Gobrey shslik	285.9	VC R	LR	Cl, Of	I
	Acrodotheres tristis	Common myna	Bhat shalik	210.9	VC R	LR	Cl, Of, Hh	M
	A. fuscus	Jungle Myna	Jhuti shalik	114.8	VC R	LR	Cl, Of	I
Family - Corvidae	*Dendrocitta vagabunda*	Rufous Treepie	Harichacha	45.52	VC R	LR	Tt, Hh	M
	Corvus splendens	House Crow	Pati kak	17.52	VC R	LR	Bh, Tt	S
	C. macrorhynchos	Jungle Crow	Dar kak	33.98	C R	LR	Bh, Of, Tt	S
Family - Pycnonotidae	*Turdus cafer*	Red vented Bulbul	Bulbuli	275	VC R	LR	Bh, Of	I
Family - Muscicapidae	*Orthotomus sutorius*	Tailor Bird	Tuntunis	39.11	VC R	LR	Bh	I
	Prinia inornata	Plain Prinia	Bonu tuni	19.23	C R	LR	Bh	I
	Copsychus saularis	Magpie	Magpie robin	45.52	VC R	LR	Cl, Bh, Hh	I
Family - Paridae	*Parus major*	Grey Tit	Tit poukh	30.77	VC R	LR	Bh, Tt	I
Family - Nectarinidae	*Nectarinia zeylonica*	Purple Rumped Sunbird	Moutushi	13.47	FC R	LR	Tt, Hh	N
Family - Motacillidae	*Anthus campestris*	Tawny Pipit	Mat chorai	50.00	FC M	LR	Cl	I
Family - Passeridae	*Passer domesticus*	House Sparrow	Churoi	480.13	VC R	LR	Hh, Of	G
Family - Ploceidae	*Ploceus philippinus*	Baya Weaver	Babui	69.88	C R	LR	Cl, Tt	G

Abbreviation: [1]PD= Population Density, [2]RA/RS = Relative Abundance / Resident Status, [3]IUCN = International Union for Conservation of Nature, NS = National Status, [4]HU = Habitat Utilization, [5]FH = Feeding Habit, VC = Very Common, C = Common, FC = Fairly Common, F = Few, R = Resident, M = Migratory, CR = Critically Endangered, EN= Endangered, LR = Lower Risk, DD = Data Deficient, Bh = Bush, Of = Open field, Hh = Human habitation, Cl = Cultivated land, Tt = Tall tree, H = Hole, R = River, P = Pond, C = Canal, Dt = Ditch, We = Water edge, p = Piscivore, r = Raptor, g = Granivore, O = omnivore, S = Scavenger, I = Insectivore, F = Frugivore, N = Nectar feeder.

Out of 37 species of resident birds, 7 (18.91%) were included in the threatened categories at the national level. Of the threatened birds, 2 (5.4%) were critically endangered, 3 (8.1%) endangered and 2 (5.4%) vulnerable (Table 1 & Fig. 4). Besides these, unavailability of nesting trees, fruit-trees and increase of human activities in and around the study site has been contributing to decline the diversity of avifauna.

Conservation Issues- Threats and Problems:

Avifauna of the study area has been reducing rapidly mainly due to illegal exploitation of trees, cutting of tree branches and destroying the natural habitats e.g., bushes, jungles, thickets, etc. Illegal trapping and shooting of birds by the local people also destroy the diversity and population of bird species

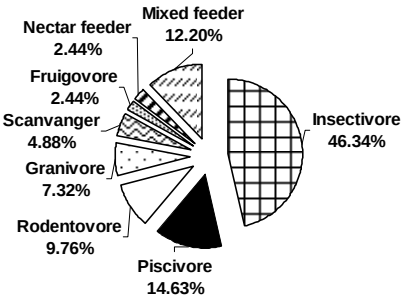

Fig. 3**.** Feeding habits of birds in BARD, Comilla.

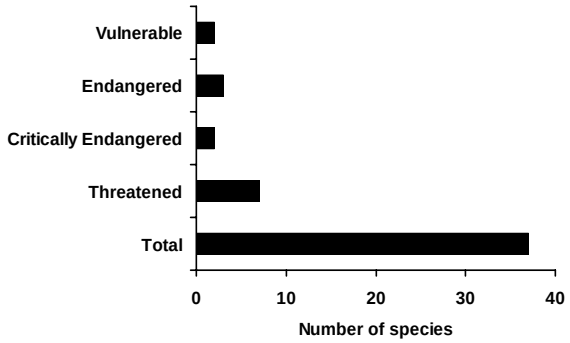

Fig. 4**.** IUCN threatened categories of recorded birds at BARD.

Village children collect young birds to use as cage bird or play with them for their recreation. Many birds were killed at the study area by poisoning them while people using insecticides in their cultivated land. Another important cause is to kill the pond heron, little egret, common myna, pied starling, jungle myna and some other game birds by using poison bait at the study area.

Recommendations

Regular patrolling by trained persons should control unwise exploitation of forest resources. Plantation of indigenous fruit-trees is necessary to create natural food sources for fruigivorous birds. Trapping and shooting should be prohibited. Use of highly poisonous insecticides in the agricultural fields adjacent to the study area should not be allowed. A management action plan should be prepared and implemented with the cooperation of National and International organizations for conservation of these bird resources in the study area. Conservation biologist and government should work together with the local communities to create awareness for the conservation of avian diversity in the study area. Establishment of Wildlife Conservation and Management department should be given priority to train people for conservation and monitoring the diversity of avifauna.

References

Akter, S. 1977. *The wildlife fauna of Baldah Garden*, Dhaka (with notes on ecology, habitat and present status). M.Sc. thesis (unpublished), Department of Zoology, University of Dhaka, Bangladesh.

Ali, S. & Ripley, S.D. 1968-1974. The Books of the bird of India and Pakistan. Vols. 1-10. Oxford University Press. Bombay, London, New York.

Ali, S. & Ripley, S.D. 1983. *A Pictorial Guide to the Birds of the Indian Subcontinent*. Bombay Nat. Hist. Soc. Oxford University Press, 737 pp.

Annonymus. 2000. Red book of threatened birds, IUCN –World Conservation Union.

Das, S.R. 1972. *Birds of Sylhet*. M.Sc. thesis (unpublished), Department of Zoology, University of Dhaka, Bangladesh.

Haque, M.N. 1975. *The avifauna of Madhupur Forest (With notes on ecology, status, distribution and food)*. M.Sc. thesis (unpublished), Department of Zoology, University of Dhaka, Bangladesh.

Harvey, W.G. 1990. Birds in Bangladesh, University Press Ltd., Dhaka, Bangladesh. Hossain, M.L. & Sarker, S.U 1997. Birds of Hatiya Island, Noakhali, Bangladesh. Dhaka Univ. J. Biol. Sci. **6(1):** 39-48.

Husain, K.Z., Rahman, M.K., Haque, M.N. & Sarker, S.U. 1992. Ecology and food habits of roadside birds from Chittagong to Technaf. Bangladesh J. Zool. **20(1):** 71- 86.

Husain, K.Z., Sarker, S.U. & Rahman, M.M. 983. Summer birds of the Sundarbans 'Nilkamal Sanctuary', Bangladesh. Bangladesh J. Zool. **11(1):** 48-51.

Husain. K.Z. & Sarker, S.U. 1979. Notes on a collection of birds from Pabna. *J. Asiat. Soc. Bangladesh*. **5(1):** 15-24

Islam, T. 1970. *Birds of Rangpur*. M.Sc. thesis (unpublished), Department of Zoology, University of Dhaka, Bangladesh.

Jaman, M. F., Haque, M.S.Z. & Sarker, S.U. 2004. Ecology, conservation problems and status of avifauna of Noakhali Charbata coastal area. J. NOAMI. **21(1):** 1-13.

Khan, M.A.R. 2010. Wildlife of Bangladesh from Amphibia to Mammalia. A checklist. Shahitya Prakash, 87 Purana Palton Line, Dhaka 1000, 128 pp.

Rahman, M.M. 1971. Birds of Faridpur. M.Sc. thesis (unpublished), Department of Zoology, University of Dhaka, Bangladesh.

Sarker, S.U. & Sarker, N.J. 1983. Endangered wildlife of Bangladesh. Tiger paper. **10(2):** 26-28.

Sarker, S.U. 1983. Status and distribution of vultures of Bangladesh. J. Vulture Study. **9 10**: 40-41.

Manuscript received on 04.02.2012, accepted on 13.03.2012